

WHAT IS CLAIMED IS:

1. A refrigeration system including an evaporator arranged in a vehicle compartment, characterized by comprising:

5 a solenoid valve arranged at an inlet of the evaporator and capable of shutting off a refrigerant passage between an expansion valve and the evaporator when operation of the system is to be stopped and during stoppage of the operation; and

10 a check valve arranged at an outlet of the evaporator, for preventing a refrigerant sucked by a compressor when the operation of the system is to be stopped, from flowing back into the evaporator during the stoppage of the operation.

15 2. The refrigeration system according to claim 1, characterized by further comprising a liquid pump arranged in a passage connecting between a bottom of the evaporator and a downstream side of the check valve, the liquid pump  
20 being capable of collecting from the evaporator a liquid refrigerant stored therein.

3. A method of operation for a refrigeration system used in an automotive air conditioner,

25 characterized in that when operation of the automotive air conditioner is stopped, a refrigerant in an evaporator is collected beforehand.

4. The method of operation for a refrigeration system according to claim 3, characterized in that the collection of the refrigerant is carried out by shutting  
5 off a refrigerant passage on an inlet side of the evaporator and operating a compressor for a predetermined time to suck in the refrigerant from the evaporator through a check valve.

10 5. The method of operation for a refrigeration system according to claim 4, characterized in that a liquid refrigerant stored in a bottom of the evaporator is collected by an electric motor-driven liquid pump in response to a stop of the operation of the automotive air  
15 conditioner, and the liquid pump is stopped on detection of lowering of a load thereof.

6. The method of operation for a refrigeration system according to claim 3, characterized in that the  
20 collection of the refrigerant is carried out by shutting off a refrigerant passage on an inlet side of the evaporator, and deferring, in response to a turn-off operation of an engine key, an engine stop for a predetermined time to operate a compressor for the  
25 predetermined time, thereby sucking in the refrigerant from the evaporator through a check valve.

7. The method of operation for a refrigeration system according to claim 6, characterized in that a liquid refrigerant stored in a bottom of the evaporator is collected by an electric motor-driven liquid pump in response to a stop of the operation of the automotive air conditioner, and the liquid pump is stopped on detection of lowering of a load thereof.